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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/854,246

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Laurence J. Newell

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EXAMINER

BELLO, AGUSTIN

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 02/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/854,246

Applicant(s)

NEWELL, LAURENCE J.

Examiner

Agustin Bello

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 10 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/10/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Horiuchi (U.S. Patent No. 6,160,649).

Regarding claim 1, Horiuchi teaches an optical fiber communications system including a transmitter node (10S, fig. 1) coupled to a receiver node (12R) by an optical fiber (14), a method for synchronizing the receiver node with the transmitter node, the method comprising at the transmitter node: generating a reference signal (fr, by 20 and 22, col. 6, lines 44-48), synchronizing the transmitter node with the reference signal (fr)(col. 5, lines 32-35 and col. 15, lines 30-32), modulating the reference signal onto an optical signal (col. 5, lines 15-20 and/or col. 15, lines 33-35); and transmitting the optical signal across the optical fiber to the receiver node (col. 7, lines 10-16), and at the receiver node: receiving the optical signal (by 60, detailed in fig. 5, col. 8, lines 37-41), recovering the reference signal from the optical signal (by 62, col. 8, lines 43-45), and synchronizing the receiver node with the recovered reference signal (by 70, col. 8, line 59 - col. 9, line 5).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 4, 5, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horiuchi (U.S. Pat. No. 6,160,649) in view of Rowan et al. (Hereinafter "Rowan") (U.S. Pat. No. 6,529,303 B1).

Regarding claims 2 and 10, Horiuchi teaches a transmitter incorporating an oscillator. Horiuchi differs from the claimed invention in that Horiuchi fails to specifically teach a receiver node including a local oscillator. However, Rowan discloses a receiver including a local oscillator (column 18 lines 37-42). One skilled in the art would have been motivated to include an oscillator in the receiver node of Horiuchi as taught by Rowan as a means for performing synchronization of the at the receiver end based on the reference signal.

Regarding claim 4, Horiuchi discloses a method of claim 1 wherein the step of modulating the reference signal onto an optical signal comprising: frequency division multiplexing (by 28, fig. 1) the reference signal (λ_r) with a plurality channels ($\lambda_1 \dots \lambda_N$) (col. 7, lines 9-23), and converting the electrical to optical to form the optical signal (col. 6, lines 40-48), and the step of recovering the reference signal from the optical signal comprises: converting the optical signal from optical to electrical form (detailed in fig. 6), and frequency division demultiplexing the reference signal from the electrical channel (col. 9, lines 44-50). Horiuchi does not show electrical low-speed channels to form an electrical high-speed channel. However,

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Rowan discloses a plurality of low-speed channels can be combined to form an electrical high-speed channel (Rowan, col. 23, lines 7-12). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to combine a plurality of electrical low-speed channels to form an electrical high-speed channel as taught by Rowan into the method of Horiuchi in order to increase the speed of transferring data in the system. One would have been motivated for doing this since in the Frequency Division Multiplexing (FDM) based system, the advantage is that the system does not have stringent synchronization requirements and does not require memory buffers as would be the case with Time Division Multiplexing (TDM) approaches (Rowan, col. 5, lines 56-60).

Regarding claim 5, Horiuchi teaches the reference signal (tone signal) at a low frequency (col. 1, lines 42-45).

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horiuchi in view of Tang (U.S. Pat. No. 5,339,184).

Regarding claim 3, Horiuchi teaches the step of modulating the reference signal onto an optical signal. Horiuchi does not clearly show the use of harmonic of the reference signal. However, Tang shows the use of harmonics frequency (Tang. Col. 9, lines 30-33). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use the harmonic frequencies as taught by Tang into the system of Horiuchi in order to perform the modulating and synchronizing process. One would have been motivated for selecting harmonic frequencies is that the center frequencies of all intermodulation products should not fall within the range of the center frequency of any intermediate frequency (Tang, col. 9, lines 55-66).

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6. Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horiuchi in view of Rowan as applied to claims 2, 4, 5, and 10 above, and further in view of Tang (U.S. Pat. No. 5,339,184).

Regarding claim 11, the combination of Horiuchi and Rowan teaches the step of modulating the reference signal onto an optical signal. The combination of Horiuchi and Rowan does not clearly show the use of harmonic of the reference signal. However, Tang shows the use of harmonics frequency (Tang. Col. 9, lines 30-33). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use the harmonic frequencies as taught by Tang into the system of Horiuchi in order to perform the modulating and synchronizing process. One would have motivated for selecting harmonic frequencies is that the center frequencies of all intermodulation products should not fall within the range of the center frequency of any intermediate frequency (Tang, col. 9, lines 55-66).

Regarding claim 12, the combination of references and Horiuchi in particular teaches that the transmitter node further includes: electronics (reference numeral 24 in Figure 1 of Horiuchi) coupled between the local oscillator and the FDM multiplexer for generating a pilot tone from the reference signal, wherein the FDM multiplexer (reference numeral 28 in Figure 1 of Horiuchi) combines the low-speed channels with the pilot tone into an electrical high-speed channel; and an E/O converter (reference numeral 18 in Figure 1 of Horiuchi) coupled to the FDM multiplexer for converting the electrical high-speed channel into an optical high-speed channel; and the receiver node further includes an O/E converter (reference numeral 144 in Figure 1 of Horiuchi) coupled to the FDM demultiplexer (reference numeral 140, 142 in Figure 1 of Horiuchi) for receiving the optical high-speed channel and converting it to the electrical high-

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speed channel; wherein the FDM demultiplexer recovers the pilot tone from the electrical high-speed channel and the electronics in the receiver node (reference numeral 146, 148 in Figure 1 of Horiuchi) recover the reference signal from the pilot tone.

Regarding claims 13 and 14, the combination of references and Horiuchi in particular teaches the reference signal (tone signal) at a low frequency (col. 1, lines 42-45).

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rowan (Hereinafter "Rowan") (U.S. Pat. No. 6,529,303 B1) in view of Horiuchi (U.S. Pat. No. 6,160,649).

As claim 6, Rowan discloses an optical fiber communications system for transmitting at least two low-speed channels (col. 9, lines 41-42) across the communications system, the communications system comprising a transmitter node (see fig. 2) including an FDM multiplexer (245, col. 9, lines 39-40) for combining the low-speed channels with the reference signal into an electrical high-speed channel (col. 10, lines 41-50), and a receiver node (see fig. 2) coupled to the transmitter node by an optical fiber, the receiver node including an FDM demultiplexer (225, col. 9, lines 32-39) for recovering the reference signal from the electrical high-speed channel, a local oscillator (col. 18, lines 37-42)*, and electronics coupled to the local oscillator and the FDM demultiplexer for synchronizing the local oscillator with the recovered clock signal (detailed in fig. 7A, col. 14, lines 29-31 and col. 14, line 66-col. 15, line). Rowan does not clearly show (at a transmitter) a local oscillator for generating a reference signal. However, Horiuchi show a local oscillator at a transmitter node for generating a reference signal (Horiuchi, oscillator 20, fig. 1, col. 6, lines 44-50). Therefore, it would have been obvious to one having ordinary skill in the art to employ an oscillator or generating an reference signal as taught by

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Horiuchi into the system of Rowan in order to use this reference signal for synchronizing process. One would have motivated for using an oscillator at a transmitter node since this method provides one reference signal for the whole system, it turns out, the synchronization of a system could be easily measured and controlled (Horiuchi, col. 5, lines 32-38).

8. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rowan (Hereinafter "Rowan") (U.S. Pat. No. 6,529,303 B1) in view of Horiuchi (U.S. Pat. No. 6,160,649), and further in view of Tang (U.S. Pat. No. 5,339,184).

Regarding claims 7, the combination of references teaches that the transmitter node further includes: electronics (reference numeral 24 in Figure 1 of Horiuchi) coupled between the local oscillator and the FDM multiplexer for generating a pilot tone from the reference signal, wherein the FDM multiplexer (reference numeral 28 in Figure 1 of Horiuchi) combines the low-speed channels with the pilot tone into an electrical high-speed channel; and an E/O converter (reference numeral 18 in Figure 1 of Horiuchi) coupled to the FDM multiplexer for converting the electrical high-speed channel into an optical high-speed channel; and the receiver node further includes an O/E converter (reference numeral 144 in Figure 1 of Horiuchi) coupled to the FDM demultiplexer (reference numeral 140, 142 in Figure 1 of Horiuchi) for receiving the optical high-speed channel and converting it to the electrical high-speed channel; wherein the FDM demultiplexer recovers the pilot tone from the electrical high-speed channel and the electronics in the receiver node (reference numeral 146, 148 in Figure 1 of Horiuchi) recover the reference signal from the pilot tone. The combination of Horiuchi and Rowan teaches the step of modulating the reference signal onto an optical signal. The combination of Horiuchi and Rowan does not clearly show the use of harmonic of the reference signal. However, Tang shows the use

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of harmonics frequency (Tang. Col. 9, lines 30-33). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use the harmonic frequencies as taught by Tang into the system of Horiuchi in order to perform the modulating and synchronizing process. One would have motivated for selecting harmonic frequencies is that the center frequencies of all intermodulation products should not fall within the range of the center frequency of any intermediate frequency (Tang, col. 9, lines 55-66).

Regarding claims 8 and 9, the combination of references and Horiuchi in particular teaches the reference signal (tone signal) at a low frequency (col. 1, lines 42-45).

Response to Arguments

9. Applicant's arguments filed 9/10/04 have been fully considered but they are not persuasive. The applicant argues that Horiuchi fails to specifically teach synchronization at the receiving node. However, the opposite is clearly true based on Horiuchi's disclosure of a synchronous detector in Figure 6. Furthermore, while the applicant defines what is meant by synchronization in the arguments, the claim language fails to convey the intended meaning.

10. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., synchronization as defined in the applicant's arguments) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Agustin Bello
Examiner
Art Unit 2633

AB


AGUSTIN BELLO
PATENT EXAMINER

2/7/05